Wireless Tester

User's Guide v2.0

MIL-STD COMPLIANT 810F

PROTECTION IP54

802.11a 802.11b 802.11g 802.11n

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1. Product Overview

The Tester is a wireless testing device that operates in Win CE platform. Supporting 802.11a/b/g/n protocol, it not only provides the chosen wireless environment with complete information such as the signal quality of each channel and the numbers of base stations, but also monitors all base station of channels.

In addition, the Tester can help users to trace the information of selected base stations, including the encryptions, the packets and the stations connecting to base station.

The Tester also offers the engineers some practical tools for reference during site survey or setting.

2. Hardware Specification

Intel PXA270 520MHz 32 bits RISC Processor
128 MB SDRAM and 128 MB Flash ROM
802.11 A/B/G, 5 dBi Dual Band Detachable Antenna x2
Antenna Connector, RP-SMA Jack
One USB port built in
240 x 320, 3.5” Color TFT Display
1 Numeric Keyboard with LED backlight
Wolfson WM9705 AC’ 97 codec with Touch screen controller
3000mAH, 7.4V Li-Ion battery pack
One rechargeable backup battery
Dimension 192.5mm (L) x 91.3mm / 78mm (W) x 42.2mm / 60.6mm (H)
Weight：560g with Standard Battery Pack
OS. WinCE. NET5.0 Professional
Environmental
Operation: -10~50℃ ; Storage: -20~79℃
Humidity: Operation- 10%~80%
IP54Certificated, IP64 compliant
1.2m (4ft) drop to concrete certificated
1.5m (5ft) drop to concrete, System no broken

2a. Package Content

Tester

Dual Band Antenna x2

Carrying bag with strap

Styli

USB Host Cable

Li-ion Battery

DC Adapter

Power Cord

U Disk

2b. Accessories

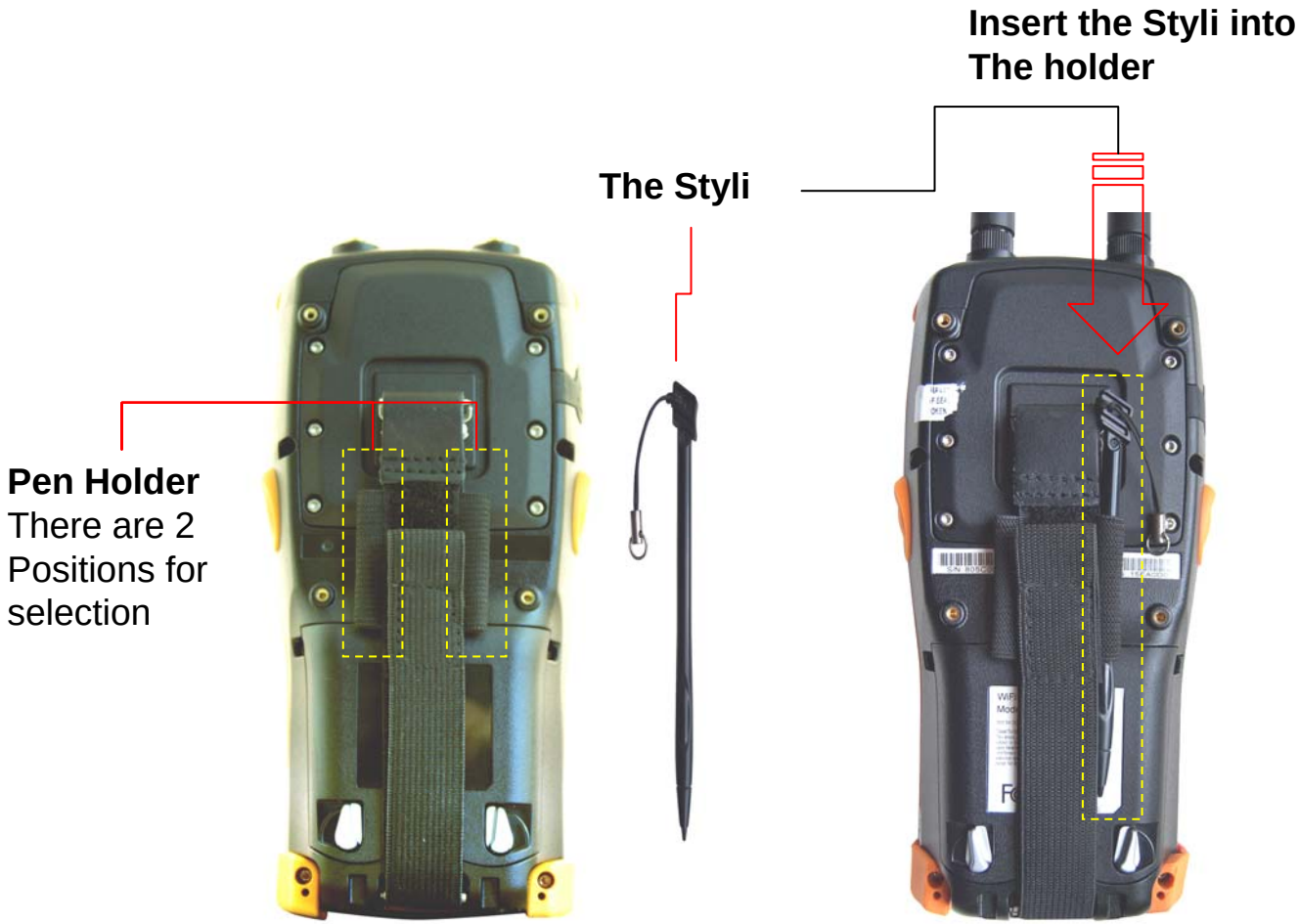
Model	Connector 1	Connector 2	Description
WC-D0N0-5CT	RP-SMA Plug	N Plug	For Outdoor Antenna
WC-D0D1-5CT	RP-SMA Plug	RP-SMA Jack	For Indoor Antenna
WC-D0C1-5CT	RP-SMA Plug	RP-TNC Jack	For Cisco Antenna
WC-D0S1-5CT	RP-SMA Plug	SMA Jack	For Attenuator (Tester Side)
WC-D0S0-5CT	RP-SMA Plug	SMA Plug	For Attenuator (Normal AP Side))
WC-C0S0-5CT	RP-TNC Plug	SMA Plug	For Attenuator (Cisco AP Side)
WC-N0S0-5CT	N Plug	SMA Plug	For Attenuator (Outdoor AP Side)
Attenuator-S0S1-10	SMA Plug	SMA Jack	Attenuator 10dB
Attenuator-S0S1-20	SMA Plug	SMA Jack	Attenuator 20dB
Attenuator-S0S1-30	SMA Plug	SMA Jack	Attenuator 30dB

3. Functions

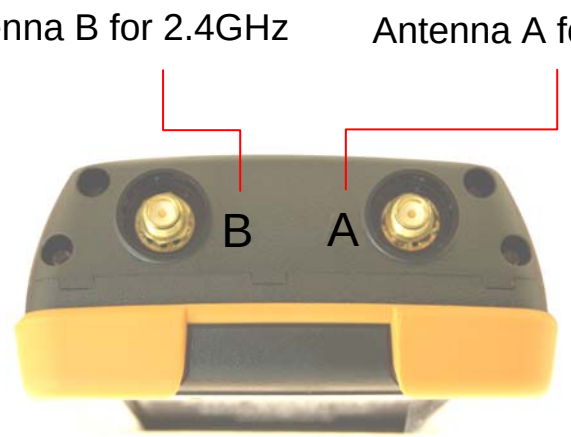
Sensitivity	Up to -100 dbm
Instant Power On	Yes
Operation	Easy
Equipment Design	Industrial PDA
Continuous Operation	4 Hrs
Defense	IP64 Water-Proof / Dust-Proof Passable with dropping to Concrete Ground from 1.5Meters
Package	Dual-Purpose Holster ; Usage for Shoulder and Waist
Data Output	USB / USB host Cable
Signal Strength Test	Yes, All Channels
Usage of Channel (Quantity of Base Station in each Channel)	Yes
Score of Channels	Yes
Scanning Base Station	A/B/G/N in the same time
Information of Base Station	SSID/BSSID/RSSI, Sorting, Channel Selection
Base Station Tracing	Yes
Information of Specified Base Station	Yes
Roaming-Test Report	Yes
Security's Detecting	Yes
Clients' Status of Specified Base Station	Yes
Status of Base Station	Data Rate (54/48/../6/11/../1 Mbps ; Frame (Ctl/Mgt/Data/Error/retry)
Rogue AP Detecting	Yes
Rogue Client Detecting	Yes
Linking Test	Offer the ratio of transition and Revelation of Signal's Strength
Aux. Tools	Free Space Attenuation ; Power Meter Effective Range Calculation ; Output Power Translator (mW/ dBm) Base Station Detector ; Network User Detector

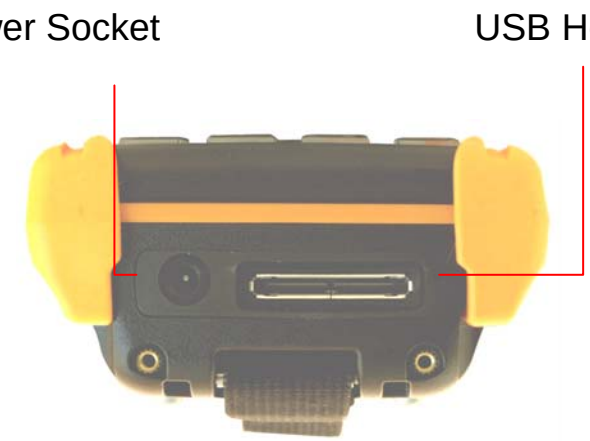
4. External Buttons

4a.
Touch Pen Styli



4b.
USB Interface





4c.
LED Signal

Battery Status LED

Battery Low

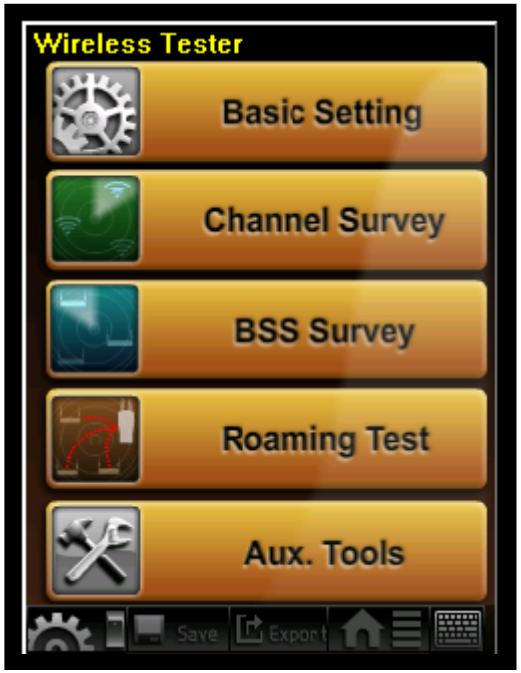
Other hot keys
F1 + F4, Reset System
F1 + F4 + Power, Reset to Factory Default
F2 Back Light Setting,
Push the button to keep the backlight shining. Press one more time to go back to original setting.
F3, Calibration for Touch Screen

Battery Charging Status LED
Red: Charging
Green: Charging Completely

5.
Starting
Page

The function table will be right on after starting the system.

6. Main Function



The Tester is designed to offer various kind of reliable functions to detect, analyze and observe the assigned wireless environments for the purpose of trouble shootings.
With the collected information we can optimize the best infrastructure or setup certain Precautions to the negative impacts that will cause To the network.

There are 5 main functions for users to quick switching the option:
Basic Setting: Set up the region (Country/Area), time and check the status of Battery
Channel Survey: Information of each channel
BSS Survey: Information of the base station on each channel
Roaming Test: Check if the construction of base station is suitable for roaming
Aux. Tools: Including the Attenuation of Free Space ; Measurement of Power ; Calculation of Effective Range ; Conversion of power unit (mW/ dBm)
Detection of Base Station ; Detection of Wireless Client

6a. Instant Function Keys

These keys help users switch to various pages.

Setup: <click the button> The Tester will be switched to basic setting page
Save: <click the button> The page and the collected data can be stored
Export: <click the button> The saved files can be exported to external USB disk
Home: <click the button> Switch to main page
Soft Keyboard: <click the button> the keyboard will be showed on the screen

7. The Setup Page

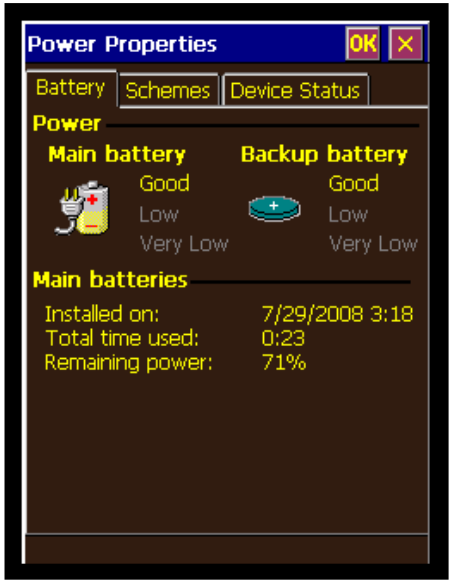
The setup contains the region (WLAN) settings and the system settings

1. Region settings:
Choose the proper area. While changing the settings, please push both “F1” and “F4” buttons at the same time to save and start the new setting.

2. System settings:
The page displays battery status, the configuration of time, date as well as volume, and tools for firmware upgrading.
And firmware upgrade tools (picture showed as below)

<NOTICE>
The storage will be filed as the name of date. Please adjust the right time and date before using the Tester at first.

7.
The Setup Page



Status of battery

Date/Time Properties
OK
Date/Time
July 2008
S M T W T F S
29 30 1 2 3 4 5
6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30 31 1 2
3 4 5 6 7 8 9
3:39:30 PM
Time Zone
(GMT+08:00) Taipei
Automatically adjust clock for daylight saving
Apply

Setup for data and time

Control of volume and sound

7a. Firmware Update

Note
Do not upgrade the system without any reason. If upgrading fails, warranty is void.
Please copy the firmware of Wireless Tester,wirelesstester.bin,into the root directory of U disk
Update
Cancel

Note
Do not upgrade the system without any reason. If upgrading fails, warranty is void.
Please copy the firmware of Wireless Tester,wirelesstester.bin,into the root
OK
System upgrade is completed Please press F1+F4+Power keys to cold boot the Tester for applying new firmware

Steps in upgrading firmware:

1. Connect U disk which contains the file, wirelesstester.bin, to Tester with USB host cable.
2. Click “Update” button in Basic Setting page, displayed as the left picture.
3. Click “Update” button
4. After the updating is completed, a new page will show up as below.
5. Click F1+F4+Power to restart Tester for completing upgrade.

Copy wirelesstester.bin to the root directory of U disk

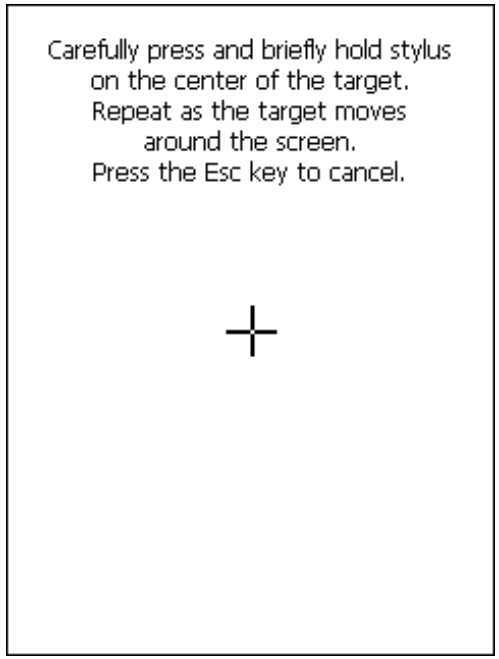
7a. Firmware Update

6. A caution as left picture will appear on the screen if U disk is not properly connected or the file wirelesstester.bin cannot be found, please renew the upgrading.

Note
Do not upgrade the system without any reason. If upgrading fails, warranty is void.
Please copy the firmware of Wireless Tester,wirelesstester.bin,into the root directory of U disk
OK
Please check the U disk and find out the Tester firmware,wirelesstester.bin

7b. Calibration of Touch Screen

When you feel the touch screen function is poor or the operation does not match the exact location it should be, please recalibrate the screen by using “F3” function key to recalibrate again.


Carefully press and briefly hold stylus
on the center of the target.
Repeat as the target moves
around the screen.
Press the Esc key to cancel.

8. Country Domain List (1)

Region	2.4G(B/G)	5G (A)
Albania	1-13	
Algeria	1-13	
Argentina	1-13	56,60,64,149,153,157,161
Armenia	1-13	36,40,44,48,52,56,60,64
Australia	1-13	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
Austria	1-13	36,40,44,48
AZERBAIJAN	1-13	36,40,44,48,52,56,60,64
BAHRAIN	1-13	36,40,44,48,52,56,60,64,149,153,157,161,165
BALARUS	1-13	
BELGIUM	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
BELIZE	1-13	149,152,153,157,160,161,165
BOLIVIA	1-13	149,152,153,157,160,161,165
BRAZIL	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140,149,153,157,161,165
BRUNEI DARUSSALAM	1-13	149,152,153,157,160,161,165
BULGARIA	1-13	36,40,44,48,52,56,100,104,108,112,116,120,124,128,132,136,140
CANADA	1-11	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
CHILE	1-13	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
CHINA	1-13	149,152,153,157,160,161,165
COLOMBIA	1-11	36,40,44,48,52,56,60,64,149,153,157,161,165
COSTA_RICA	1-13	

8. Country Domain List (2)

Region	2.4G(B/G)	5G (A)
CROATIA	1-13	36,40,44,48,52,56,60,64
CYPRUS	1-13	36,40,44,48,52,56,60,64
CZECH	1-13	36,40,44,48,52,56,60,64
DENMARK	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
DOMINICAN REPUBLIC	1-11	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
ECUADOR	1-13	
EGYPT	1-13	36,40,44,48,52,56,60,64
EL_SALVADOR	1-13	
ESTONIA	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
FAEROE_ISLANDS	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
FINLAND	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
FRANCE	1-13	36,40,44,48,52,56,60,64
FRANCE2	1-13	36,40,44,48,52,56,60,64
GEORGIA	1-13	36,40,44,48,52,56,60,64
GERMANY	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
GREECE	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
GUATEMALA	1-11	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
HONDURAS	1-13	
HONG_KONG	1-13	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
HUNGARY	1-13	36,40,44,48,52,56,60,64

8. Country Domain List (3)

Region	2.4G(B/G)	5G (A)
ICELAND	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
INDIA	1-13	36,40,44,48,52,56,60,64,149,153,157,161,165
INDONESIA	1-13	149,153,157,161,165
IRAN	1-13	149,152,153,157,160,161,165
IRAQ	1-13	149,152,153,157,160,161,165
IRELAND	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
ISRAEL	1-13	
ITALY	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
JAMAICA	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
JAPAN	1-14	34,38,42,46
JAPAN1	1-14	34,38,42,46
JAPAN2	1-11	34,38,42,46
JAPAN3	1-14	8,12,16,34,38,42,46,184,188,192,196
JAPAN4	1-14	34,38,42,46
JAPAN5	1-14	34,38,42,46
JAPAN6	1-13	34,38,42,46
JORDAN	1-13	36,40,44,48,149,153,157,161,165
KAZAKHSTAN	1-13	
KENYA	1-13	
KOREA_NORTH	1-13	149,152,153,157,160,161

8. Country Domain List (4)

Region	2.4G(B/G)	5G (A)
KOREA_ROC	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,145,149,153,157,161,165
KOREA_ROC2	1-13	149,153,157,161
KUWAIT	1-13	
LATVIA	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
LEBANON	1-13	
LIBYA	1-13	
LIECHTENSTEIN	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
LITHUANIA	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
LUXEMBOURG	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
MACAU	1-13	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
MACEDONIA	1-13	
MALAYSIA	1-13	56,60,64,149,153,157,161
MALTA	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
MAXICO	1-11	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
MONACO	1-13	36,40,44,48,52,56,60,64
MOROCCO	1-13	
NETHERLANDS	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
NEW_ZEALAND	1-13	36,40,44,48,52,56,60,64,149,153,157,161,165
NICARAGUA	1-13	36,40,44,48,52,56,60,64,149,153,157,161,165
NORWAY	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140

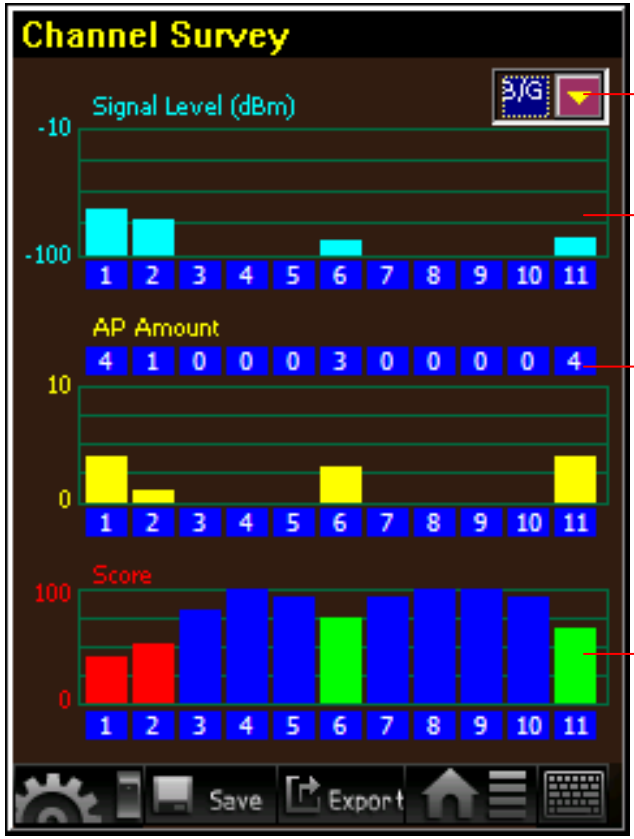
8. Country Domain List (5)

Region	2.4G(B/G)	5G (A)
OMAN	1-13	36,40,44,48,52,56,60,64,149,153,157,161,165
PAKISTAN	1-13	
PANAMA	1-11	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
PARAGUAY	1-11	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
PERU	1-13	149,153,157,161,165
PHILIPPINES	1-13	149,152,153,157,160,161,165
POLAND	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
PORTUGAL	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
PUERTO_RICO	1-11	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
QATAR	1-13	
ROMANIA	1-13	
RUSSIA	1-13	
SAUDI_ARABIA	1-13	
SINGAPORE	1-13	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
SLOVAKIA	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
SLOVENIA	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
SOUTH_AFRICA	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140,149,153,157,161,165
SPAIN	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
SWEDEN	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
SWITZERLAND	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140

8. Country Domain List (6)

Region	2.4G(B/G)	5G (A)
SYRIA	1-13	
Taiwan	1-11	56,58,60,64,149,152,153,157,160,161
THAILAND	1-13	
TRINIDAD_Y_TOBAGO	1-13	36,40,44,48,52,56,60,64
TUNISIA	1-13	36,40,44,48,52,56,60,64
TURKEY	1-13	36,40,44,48,52,56,60,64
UAE	1-13	
UKRAINE	1-13	
UNITED_KINGDOM	1-13	36,40,44,48,52,56,60,64,100,104,108,112,116,120,124,128,132,136,140
UNITED_STATES	1-11	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165
UNITED_STATES_FCC49	1-11	36,40,42,44,48,50,52,56,58,60,64,149,152,153,157,160,161,165,188,189,190,192,193,194,196,197
URUGUAY	1-13	149,153,157,161
UZBEKISTAN	1-11	36,40,42,44,48,50,52,56,58,60,64,100,104,108,112,116,120,124,128,132,136,140,149,152,153,157,160,161,165
VENEZUELA	1-13	149,153,157,161
VIET_NAM	1-13	
YEMEN	1-13	
ZIMBABWE	1-13	

9. Channel Survey



Select 802.11b/g or 802.11a from the bar. (Default value is b/g)

Signal Level show the signal strength on each channel

AP Amount Calculate the total quantities of the detected base station.
For example: number 4 on channel 1 stands for that there are 4 base stations on channel 1

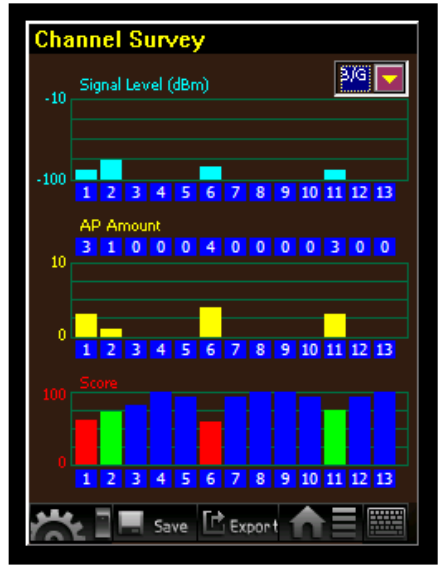
Score According to the signal strength, Tester will score the channels to 3 levels:
Blue one means excellent
Green means middle and
Red means poor

Users may select different Radio Mode in detecting, like the current frequency is 802.11b/g showed above, it might be switched to be 802.11a. The default value is B/G pattern.
Select the wanted channel, system will lead you to enter the function of selected channel

9. Channel Survey

The saved information

Net Mode			
B/G			
Signal Level			
Channel No.	Signal Level	AP Amount	Score
1	-68	4	40
2	-74	1	52
3	-100	0	81
4	-100	0	100
5	-100	0	92
6	-90	3	74
7	-100	0	92
8	-100	0	100
9	-100	0	100
10	-100	0	92
11	-88	4	65



File name: all_bg_channel_survey_time_03_52_12.csv

Click the ‘Save’ button, the following information will be stored:

a. Channel Survey Page

b. All scoring information in each channel

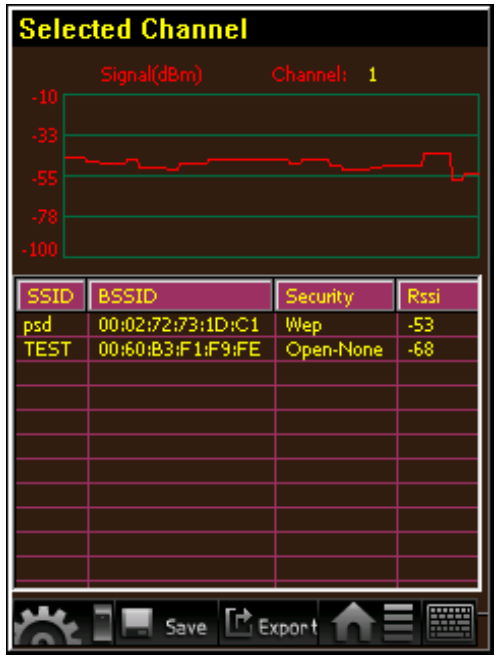
9a. The Selected Channel

This page shows the detailed information of the selected channel:

a. The red curve on the top of the graph indicates a real-time status of the wireless signal. The range of sensitivity is from -100 dBm to -10 dBm as detecting.

b. The table in the middle lists the detailed information for of the base stations in the detected channel, such as SSID, BSSID, Security and RSSI.

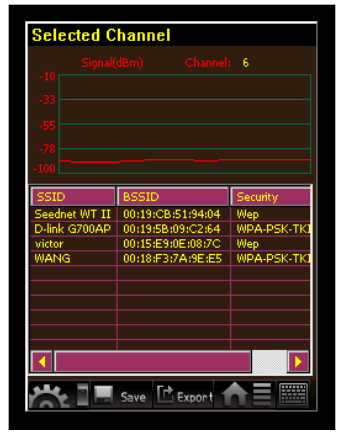
c. Click one of the base stations, the system will lead you to the function of BSS Survey.



9a. The Selected Channel

The saved information

Current Channel Signal			
Net Mode	Channel Number	Signal (dBm)	
b/g	6	-87	
Current Channel BSS List			
SSID	BSSID	Security	RSSI
Seednet WT II	00:19:CB:51:94:04	Wep	-90
D-link G700AP	00:19:5B:09:C2:64	WPA-PSK-TKIP	-91
victor	00:15:E9:0E:08:7C	Wep	-89
WANG	00:18:F3:7A:9E:E5	WPA-PSK-TKIP	-87



File name: bg_channel_6_time_04_14_19.csv

Click the ‘Save’ button, the following information will be stored:

a. The selected channel page

b. All information of base stations in the present channel, including SSID, BSSID, Security and RSSI.

10.
BSS Survey

All channels

Selected channel

a. This function is to detect the distributing status of base station in each channel. All base stations are listed on the table to reveal their signal strength and other related information.

b. User may filter out unnecessary channels to make the detecting more clear. Only informations of wanted channels are listed on the table, including SSID, BSSID, Security and RSSI.

10.
BSS Survey

c. The Tester is designed to detect any ‘unfriendly’ base station That is operating in the existed wireless environments.

As it is necessary to recognize whether the disallowed base stations exist in the surrounding, users may click “ImportMAC” button to check the file APLIST.txt, that is exported from U disk. Allowed base stations will be showed in yellow, and disallowed ones will be in red. If APLIST.txt is unseen, all defaults will be revealed in yellow.

10.
BSS Survey

The saved information

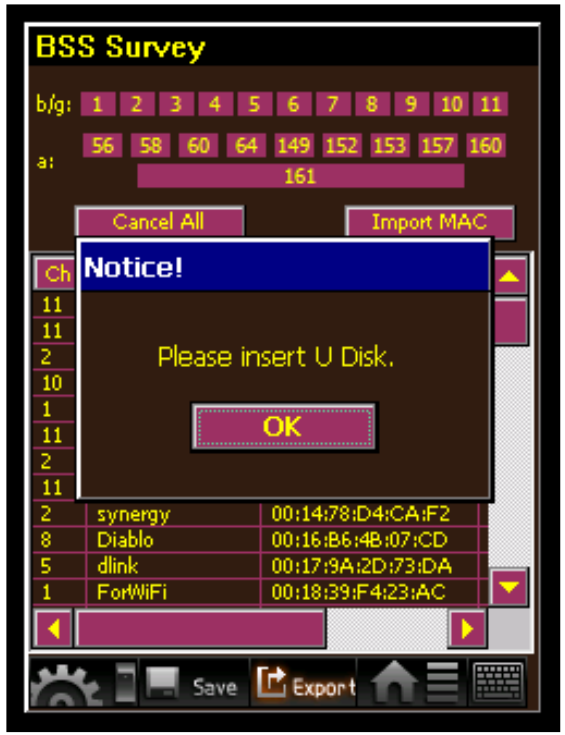
BSS List				
Channel	SSID	BSSID	Security	RSSI
1	jobehsieh	00:18:84:29:20:0A	WPA-PSK-TKIP	-90
1	asus	00:17:31:26:99:E4	Wep	-65
1	FON_jobehsieh	00:18:84:29:20:09	Open-None	-89
1	NCTU	00:16:01:7F:BC:D1	Open-None	-91
1	eric630218	00:1B:11:26:A8:D6	Wep	-92
11	WLBARGLV2-00-0A-79-B8-8D-35	00:0A:79:B8:8D:35	Open-None	-88
11	default	00:50:FC:F4:7A:56	Wep	-94
11	Hau	00:16:01:98:0F:6B	Wep	-92
11	default	00:0E:2E:F6:63:D9	Wep	-87

Click the ‘Save’ button, the following information will be stored:

a. **BSS Survey Page**

b. **Information of all base stations in the surroundings, including channel, SSID, BSSID, Security and RSSI.**

10a. Exporting Data

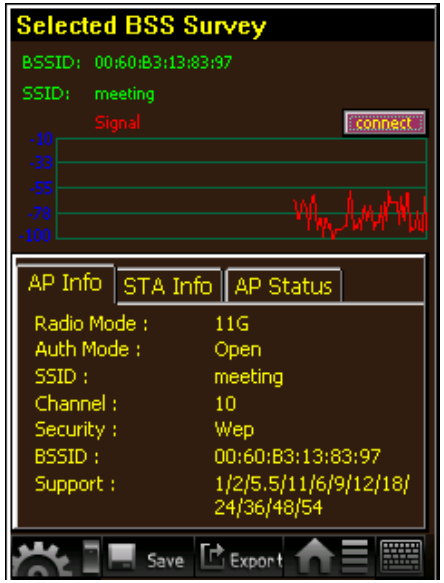


Connect U disk to Tester

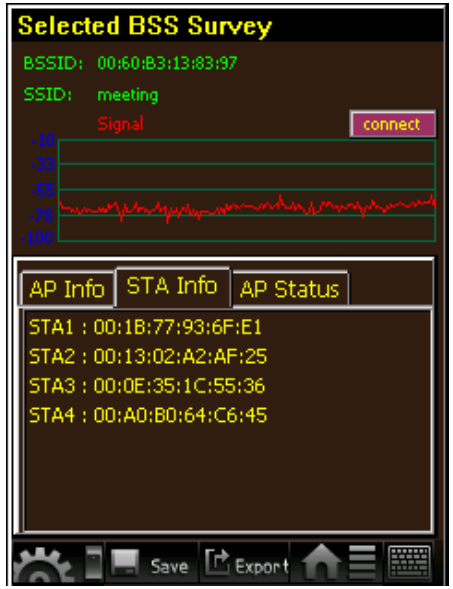
The saved files can be exported to the portable USB disk:

a. **Connect U disk to the Tester with the USB Host Cable**
b. **Click ‘Export’ button to export datas from Tester to U Disk**
c. **If U Disk is not connected to the Tester, a caution will appear on the page, please plug U Disk in again.**

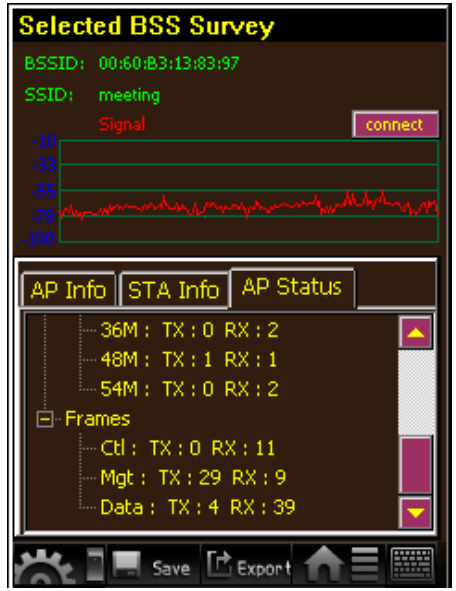
10b. Observation of The Selected Base Station



Base station information



Client list



Base station status

a. This function displays the real status of the selected base stations for detecting and tracing, such as the continuous performance of signal strength.

b. The page displays 3 main detail information, including the data as well as status of base station and something about the client connecting to this base station. If necessary, click “Connect” button, the Tester will connect the base station in client mode for further detecting.

10b. Observation of The Selected Base Station

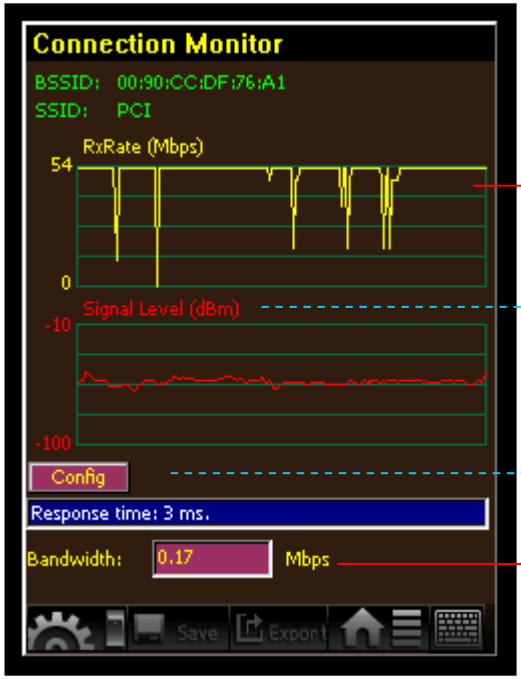
Information of the base station:
Wireless Mode
Authorization Method
Identification Code of Wireless Network
Channel
Encryption Method
Base Station ID
Supportive Bandwidth

Information of Clients:
The list to connected clients, including the MAC address, RSSI, Packet information.

Status of Base Station:
Supporting Standard (11A / 11B / 11G / 11N)
Status of packet, including control, management, data and warning included retry times.
Network is supported to be something wrong which having a serious rety.

About:
About showing IP address.

11. Connection Monitor



Wireless Data Rate

Base Station's RSSI

Ping Test

Bandwidth

The function is designed to proceed online test, it not only reveals data rate and signal intensity but also responds the ping reaction of the Tester to base station so that efficiency of base station can be figured out.

Column Bandwidth reveals the transporting bandwidth between Tester and the base station that is expected to be tested.

11a. Connection Configuration

Before connecting to the base station expected to be tested, users have to previously complete the setup of basic parameters, including the relevant parameters of base station, the certification method, the tested IP address and the Tester's IP address.

Certification method: Open / Share / WPA / WPA2 / WPA-PSK /WPA-PSK2

Encryption method: Open >> None / WEP

Share >> None / WEP

WPA >> AES / TKIP

WPA2 >> AES / TKIP

WPA-PSK >> AES / TKIP

WPA2-PSK >> AES / TKIP

Golden Key Index: Key 1 ~ Key 4

Golden Key Input:

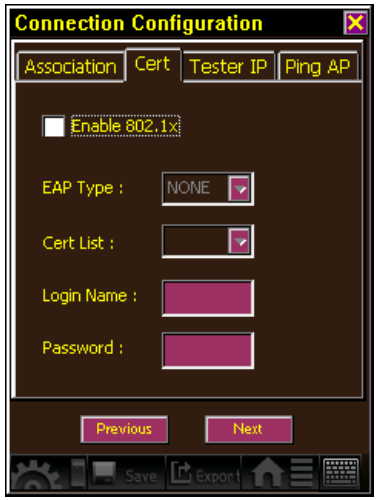
Certification Method:

Enable 802.1x

EAP Type (None / TLS / TTLS / PEAP)

11a. Connection Configuration

Certification List
Login Name
Password
IP Reference Setting
Use DHCP (Dynamic Host Configuration Protocol)
Use Current IP Address (Use fixed IP address for setting)
Contains IP Network Address, Subnet Mask, Default Gateway
Relevant setup of Ping
Base Station's IP address



After the connecting is completed, the Tester will display real Data Rate and Strength. As settings are correct, the Tester will immediately show the responses that Tester pings on base stations and the real throughput.

12. Roaming Test

The steps of roaming test:

a. Select the preferred SSID

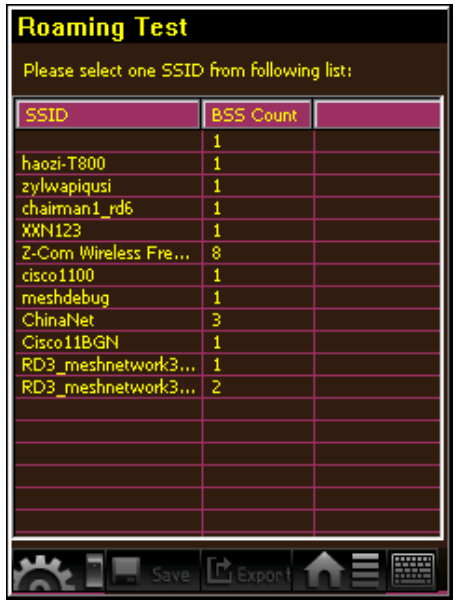
(Attention: All APs are requested to have the same SSID.)

b. When a SSID is selected, there goes a page that represents the signal strength and channel of the base stations receiving the same SSID according to the current location.

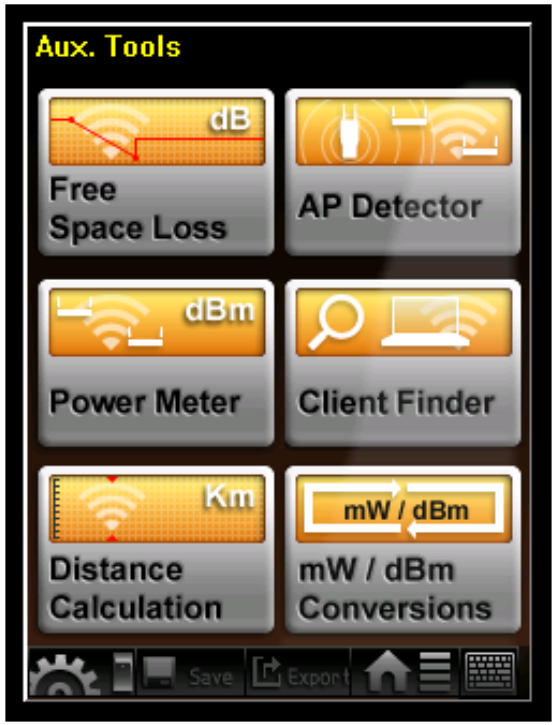
c. Based on the mobile location, users observe the signal strength of base station to judge whether the connection will be interrupted as removing, or not.

Poor **Poor for Roaming**

Good **Good for Roaming**



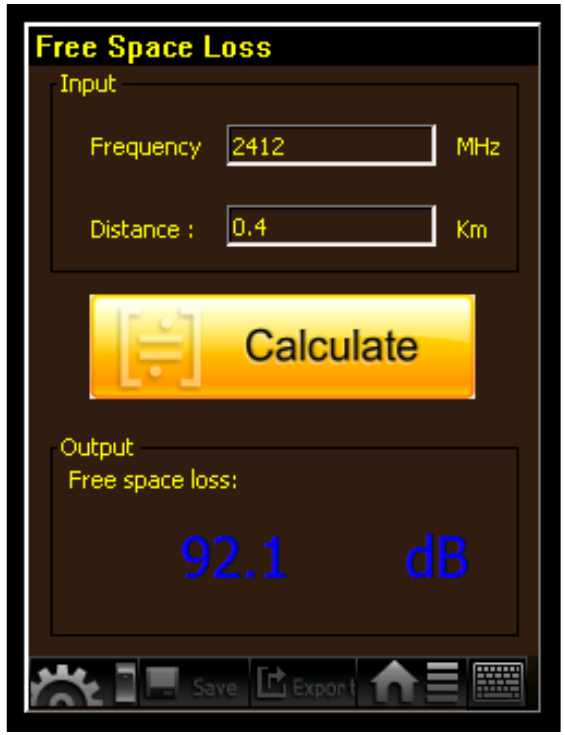
13. Auxiliary Tool

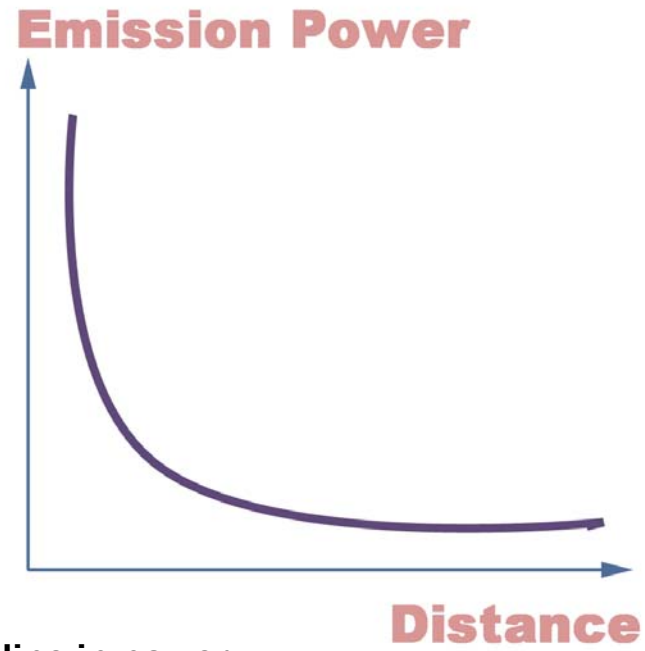


This function contains 6 auxiliary tools:

1. **Free Space Loss**
2. **Power Meter**
3. **Distance Calculation**
4. **AP Detector**
5. **Client Finder**
6. **mW / dBm Conversions**

13a. Free Space Loss



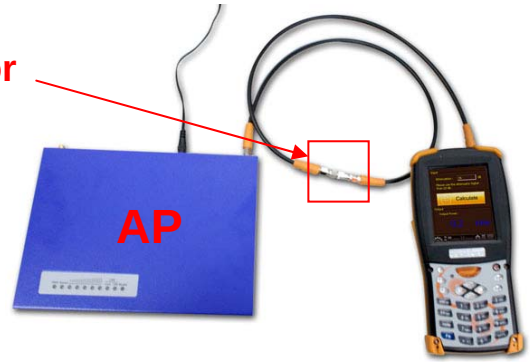


This table offers the calculation of decline in power under different frequency and range

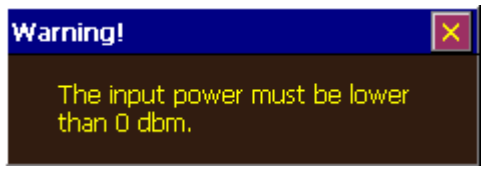
13b. Output Power Measurement

The tool is designed to measure the real output power of base station, to our suggest, connect a 20 dB attenuator at least before measuring to avoid the damage to the Tester.

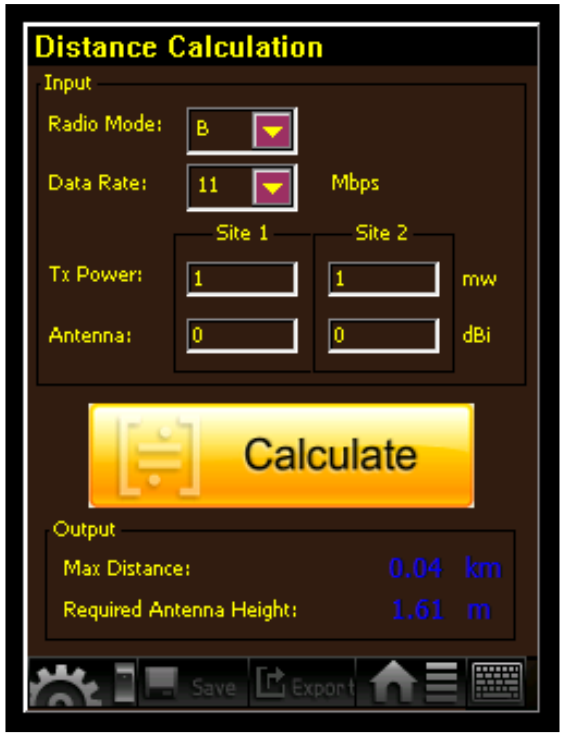
Reminder:
A 20dB attenuator is recommended to be connected and used before the measurement is started.

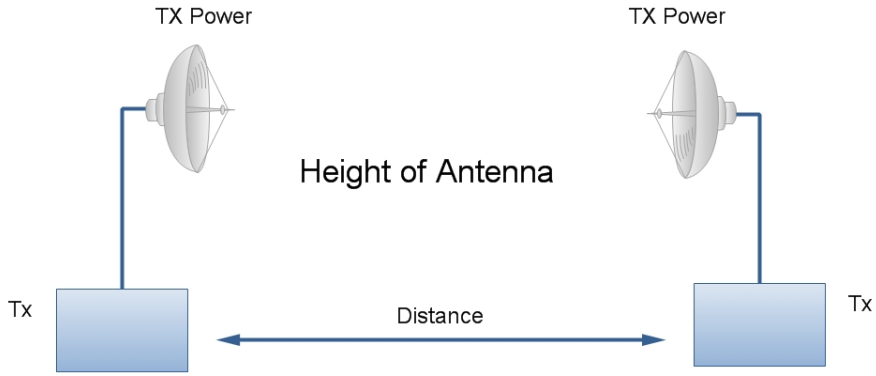


Warning:
It will cause the damage to the Tester if an attenuator is not used before measuring the output power.



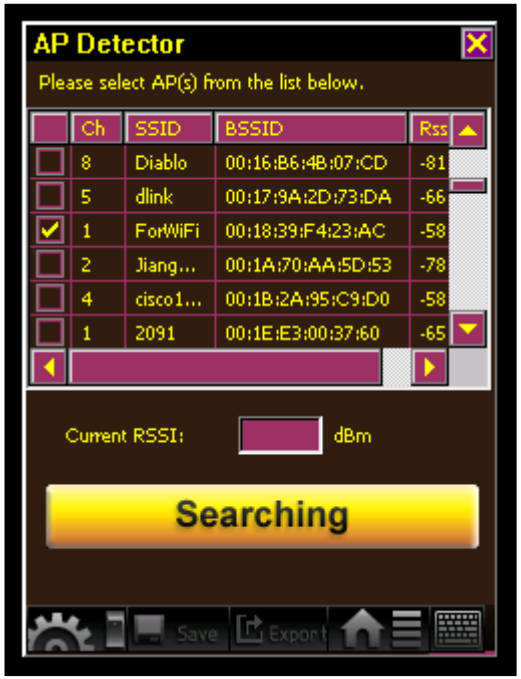
13c. Distance Calculation





Assign different modulation, data rate, output power and antenna gain to calculate the maximum range (effective distance) between the 2 base stations.

13d.
AP Detector



This function assists users to quickly find the base station.
Entering this page, the Tester will list out all base stations, users need to select the preferred one and click “Searching” button to detect.
The closer the Tester approaches to the preferred base station, the hurrier the sound from the Tester will be.

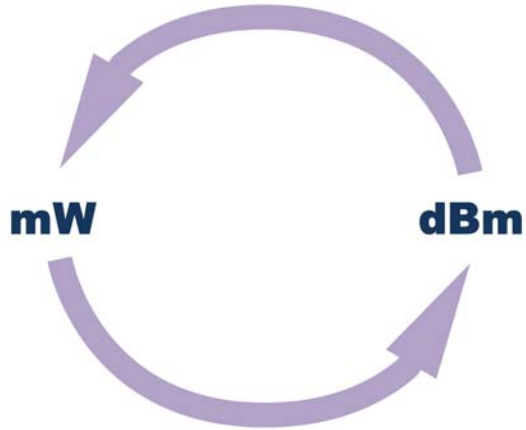
Please click “STOP” button to suspend the detecting if need.

13e.
Client Finder

This function makes users search the target client quickly. User have to key in the MAC address of the target client and then click " Searching" button, the Tester will find this target client and reveal the results on the page below, including the status, the MAC address of base station, the signal strength, the radio mode, the modulation and total packets.

Please click "STOP" button to suspend the detecting if need.

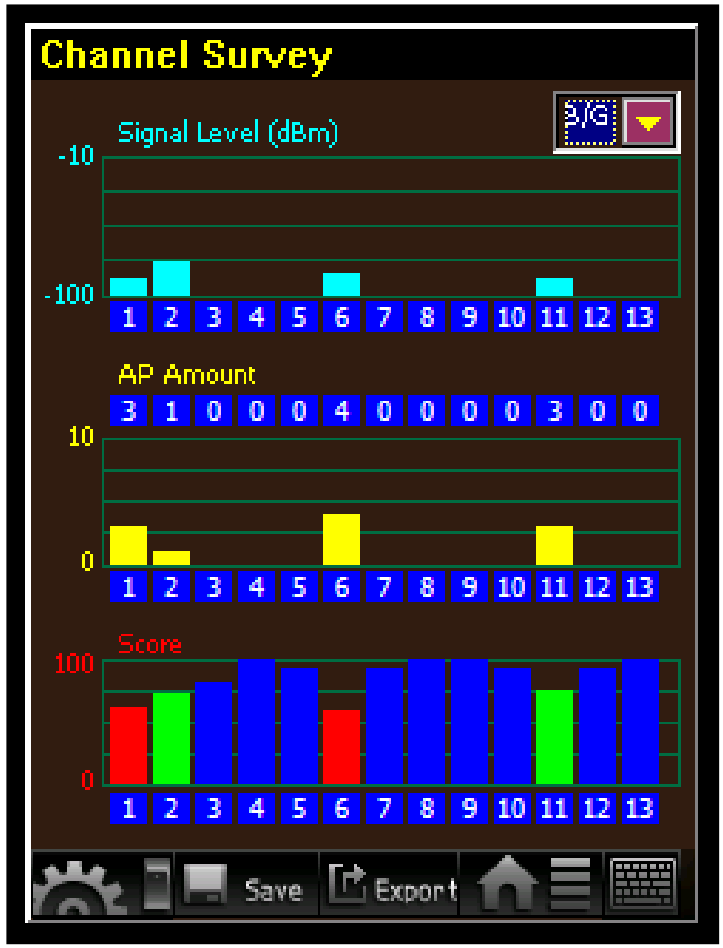
13f.
mW / dBm Converstion

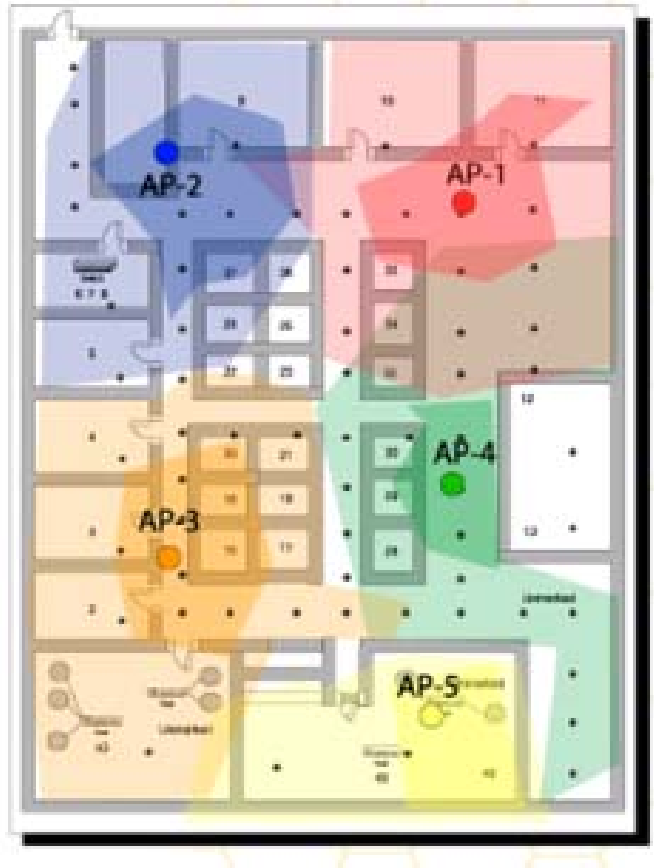


This function provides an instant conversion of mW into dBm or dBm into mW.

14. Sample Applications

[Quality Analysis of Wireless Environment]



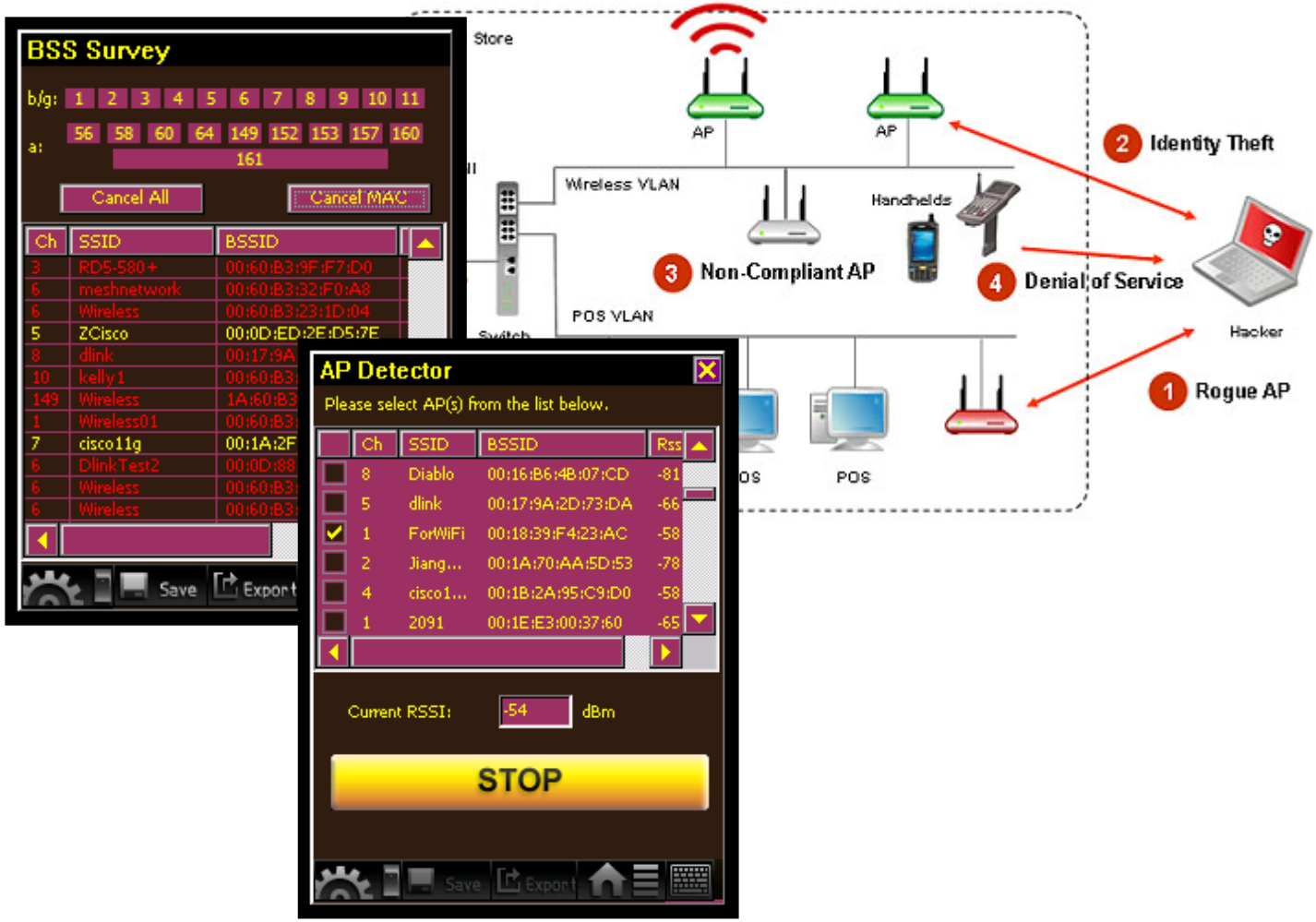


14. Sample Applications

[Detecting of the Base Station in the environment]

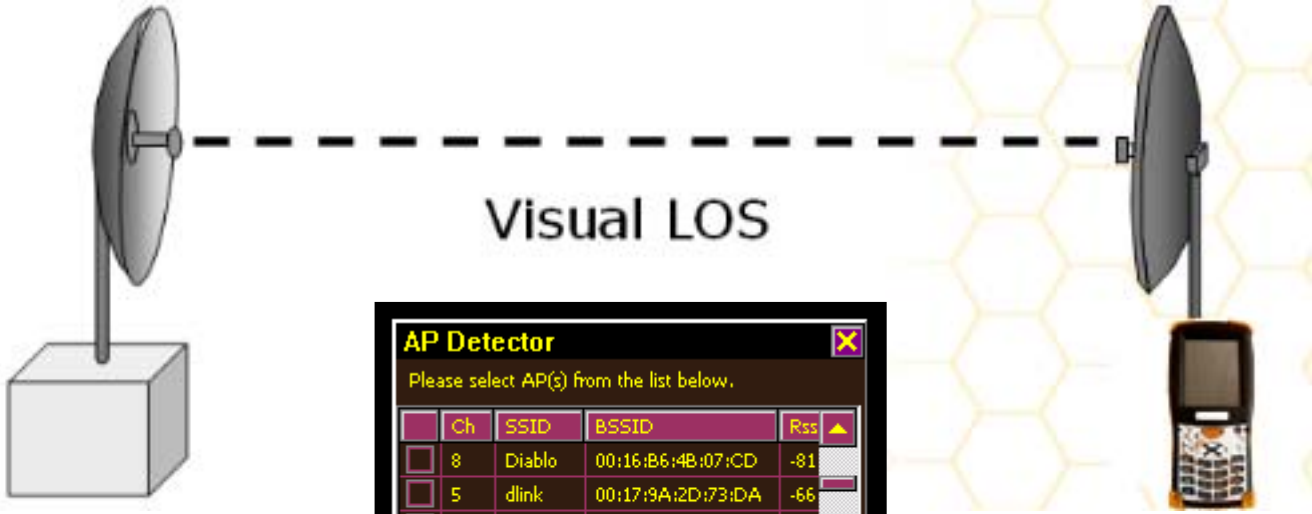
14. Sample Applications

[Detecting of the illegal base station]



14. Sample Applications

[Test of Bridging]

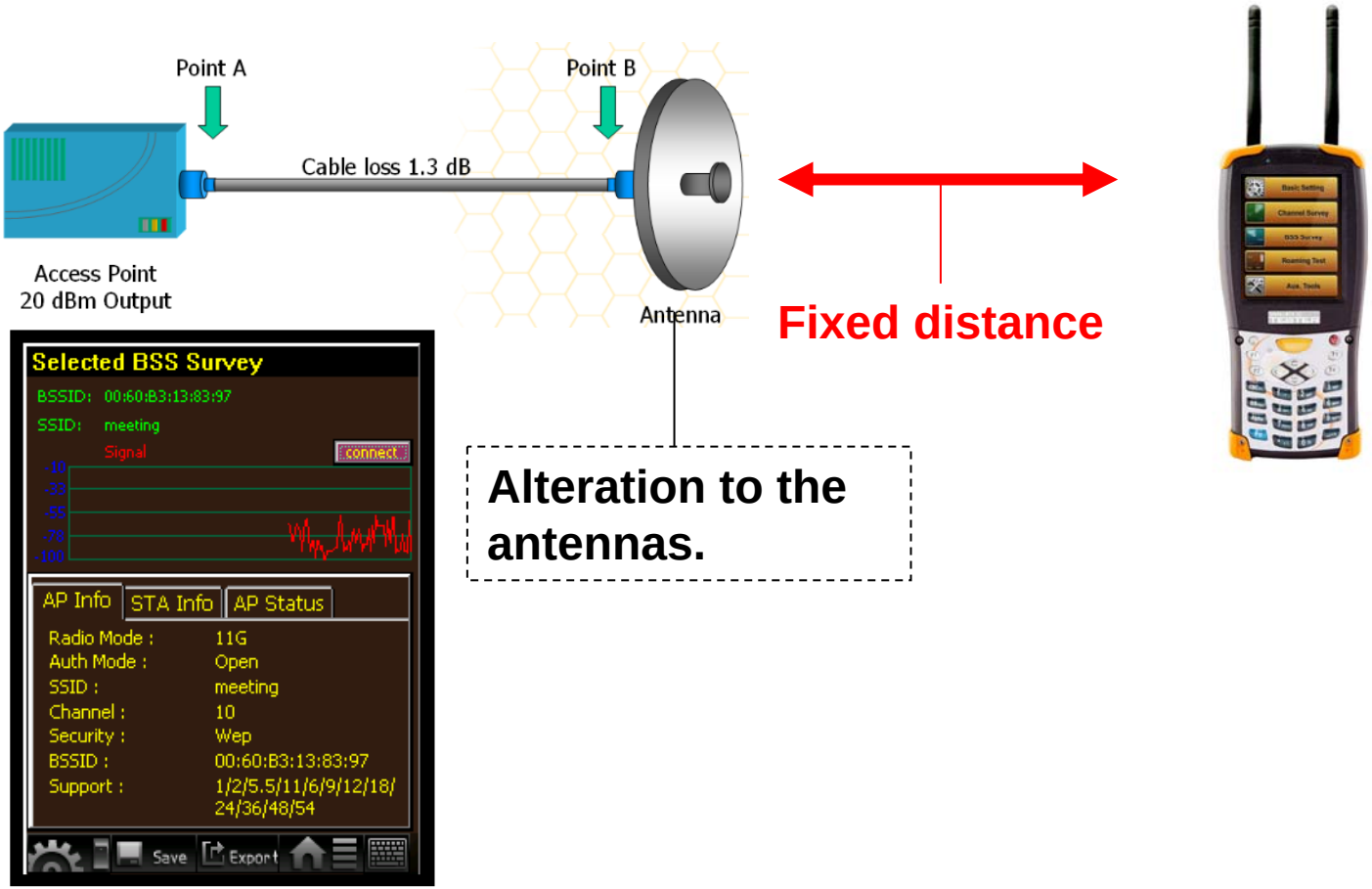


Bridge + Antenna

WiScan + Antenna

14. Sample Applications

[Test of Antenna Efficiency]



15. Trouble Shooting

a. Notice before starting the Tester

@ Charge the battery at least 6 hours before using the Tester which contains 2 rechargeable Li-ION batteries. One of them is the main battery that supplies electric power to whole system, another is the backup battery that provides necessary electric power for maintaining the data in Flash ROM. Both the batteries will charge at the same time while the system is charging. When the charging light turn green, it means the batteries are finished charging.

b. How to handle the situation of no display as booting and a red light shows up above of screen?

@ This might be the problem of starting electric power. Please push F1+F4+Power button to restart the system several times until the Tester is booted correctly.

15. Trouble Shooting

c. How to deal with the problem of LED light above screen turns red?

@ This indicates the electric capacity of main battery is in a weak position. Please charge or replace the battery as soon as possible to keep the work normally executed.

d. How to solve the problem that a blue page shows up while the testing page suddenly disappears as using?

@ This is caused by wrong execution of programs. Please push F1+F4 button to restart the Tester, or execute the step of power off / power on.

e. No messages can be found when scanning the base stations :

@ This often occurs due to a repeated scanning within a short period. It takes 10 seconds for the Tester to make a complete scan, but a hurried scan could probably enforce the Tester to continue the next scan without ending previous one, then a programming error might happen. Please restart the Tester by the step of power off / power on.

15. Trouble Shooting

f. Upgrading is unavailable

@ Possibilities

1. **The firmware has not been copied to the root directory of U disk.**
2. **Use other USB Flash Disk instead of the U disk attached by the Tester.**
3. **USB Host cable is broken or connected incorrectly.**
4. **An error happens to the file name. The correct file name should be Wirelesstester.bin**

g. The files done with the Tester cannot be exported to the U Disk (Some possibilities):

@ 1. The Disk included in the package should be used in the first place instead of other USB flash disk.
2. **The USB host cable may be broken or has not been installed properly.**
3. **The U Disk memory is full, in order to preserve more space, some of the files in the disk should be cleaned and removed, after that please try to export the files again.**

15. Trouble Shooting

f. Upgrading is unavailable

@ Possibilities

1. **The firmware has not been copied to the root directory of U disk.**
2. **Use other USB Flash Disk instead of the U disk attached by the Tester.**
3. **USB Host cable is broken or connected incorrectly.**
4. **An error happens to the file name. The correct file name should be Wirelesstester.bin**

g. Data can not be exported

@ Possibilities

1. **Use other USB Flash Disk instead of the U Disk attached by the Tester.**
2. **USB Host Cable is broken or unconnected correctly.**
3. **The memory of the U Disk is full, some of files should be cleaned out, then export the data again**

15. Trouble Shooting

h. How to clear up the problem of firmware's upgrading incomplete?

@ This is resulted from the insufficient power. Please charge the battery with AC adapter and restart the Tester again, if it still cannot be booted, push F1+F4 to restart once more. If it doesn't work still, please contact the dealer to send the Tester back to the manufactory.

NOTICE:
To our strong suggestion, please charge the Tester with AC adapter all the time during the upgrading procedure.